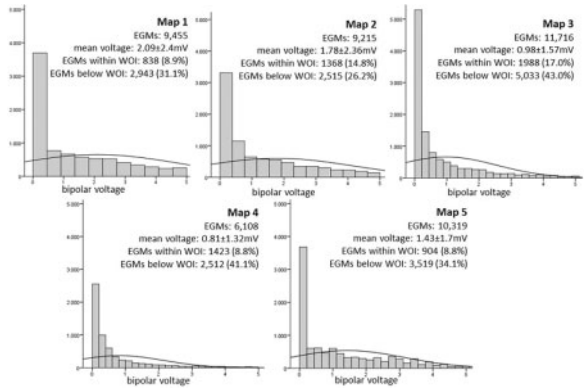

Abstract P431 Figure.

P432

Right-sided radiofrequency ablation performed by peripheral brachial venous approach reduces patient immobilization and hospitalization stay as compared to femoral venous approach

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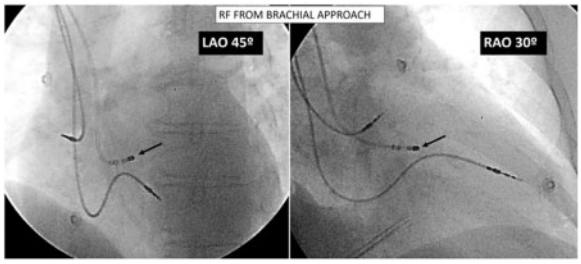
Introduction: Arrhythmia ablation is currently performed by femoral venous approach with a post-procedure patient immobilization of ≥4-6 hours to prevent bleeding in right-sided radiofrequency (RF) ablation, leading to hospital stay prolongation.
Hypothesis: Our goal was to evaluate feasibility of peripheral brachial approach of atrioventricular node RF ablation and its impact on discharge and mobilization time.
Methods: We prospectively included consecutive right sided RF ablations (n=120) implicating atrioventricular (AV) node or AV node reentrant tachycardia (AVNRT). Femoral vein approach and brachial approach were used in 60 and 60 patients, respectively. A peripheral brachial vein (right basilar or cephalic vein at elbow flexure) was cannulated by a flexible silicon catheter (#18 size). Then, a guidewire was advanced by fluoroscopic guidance and subsequently an 8F sheath was placed. A single 4-mm non-irrigated and deflectable RF ablation catheter was advanced up to axillary vein, subclavian vein, superior vena cava into the right ventricle using x-ray guidance. Then, RF ablation catheter was withdrawn and counter-clockwise rotation was applied to reach ablation target (AV node or slow pathway). Endpoint ablation was persistent complete AV block (for AV node ablation) and no induction of tachycardia with stimulation protocol (for AVNRT).
Results: Successful ablation target was achieved in 95% of attempted cases from brachial approach. No complications occurred in the brachial or femoral approach. Brachial approach reduced patient mobilization time and mandatory hospitalization stay as compared to femoral approach (from 5 ± 1 hours to 10 ± 3 min, $p<0.05$), leading to subsequent immediate hospital discharge in all patients. Procedure and fluoroscopy time were similar in femoral and brachial approaches (56 ± 31 min vs. 60 ± 35 min, p=NS; 13 ± 9 min vs 11± 8 min, p=NS, respectively).
Conclusions: This is the first reported study of peripheral brachial approach in right-sided RF ablation, which is feasible, safely performed with a 95% of success rate and reducing dramatically patient immobilization.



Abstract P432 Figure. BRACHIAL APPROACH RF ABLATION

P433

Case series of radiofrequency ablation for drug resistant inappropriate sinus tachycardia

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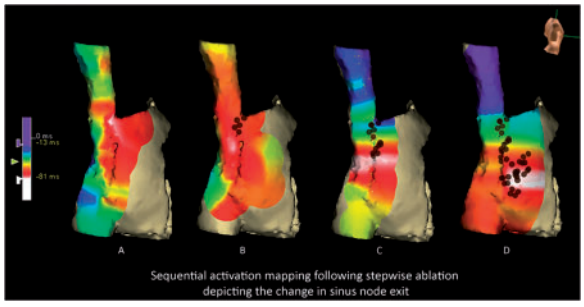
On behalf of: Centre for Heart Rhythm Disorders

Introduction: Inappropriate Sinus Tachycardia (IST) is a debilitating condition that is difficult to manage. Sino-Atrial Node (SAN) modification by radiofrequency ablation (RFA) is one of the management options in symptomatic patients with drug-resistant IST. However, the broad application of RFA is limited due to perceived low success and high complication rates.
Objective: In this case series, we report patient characteristics, success rates, complication rates, and management in eight highly debilitated patients with suspected IST after exhausting conventional therapies and counselling.
Case series: Eight patients with a median symptom duration of 8 years and suspected IST were referred to our centre for further management, some with previous electrophysiology studies (EPS) and failed RFA. In three patients, repeat EPS revealed the diagnosis of atrio-ventricular nodal re-entrant tachycardia (AVNRT) which was successfully treated with slow pathway modification. The diagnosis of IST was confirmed by exclusion in the remaining five patients. Patients were all female with a median age of 48 years [range 26-50] and a BMI of 27.33 kg/m2 [range 16-36]. Echocardiography demonstrated structurally normal hearts in all patients. All of the patients had a trial of beta-blockers, ivabradine, 20% tried class IC, and 20% tried class V AAD which failed to control their symptoms. The mean EPS prior to confirmation of the diagnosis of IST was 2 [range 1-4].
Electroanatomical mapping was performed in all patients to identify earliest point of activation and to guide the ablation. In all the patients, invariably the earliest activation point was at the high crista terminalis. Stepwise ablation technique with repetitive activation mapping was used. A crista catheter was used to monitor the change in sinus node exit to the atria. Pacing via ablation catheter was performed to ensure the absence of phrenic nerve capture. Ablation was started at the earliest point of activation and sequentially targeted sites of earliest activity (Fig.). The end point of ablation was a sudden decrease (≥20 bpm) in heart rate or the development of junctional rhythm.
After a median of 2 procedures [range 1-4], one patient remained on long term beta-blocker post procedurally and one developed phrenic nerve palsy. With a median follow up of 6 years, 40% of the patients required permanent pacing due to symptomatic bradycardia at a mean of 74 days after ablation. All patients were able to return to normal functioning.
Conclusion: SAN modification in selected patients after excluding SVT and appropriate counselling can be effective. Effective SAN modification may require multiple ablative procedures associated with a high rate of symptomatic sinus bradycardia requiring a pacemaker.



Abstract P433 Figure.

COMPLICATIONS IN DEVICE THERAPY

P435

Axillary access for ICD-CRT implantation: a new era of no acute complications? Observational study of 483 leads

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Introduction: Axillary venous access is well known for having less complications in stimulation lead insertion, however data of acute and long-term complication rates in implantable cardiac defibrillator (ICD) lead implantation are scarce.
Purpose: To describe the rate of acute and long-term complications related to axillary venous access (lead fractures, haemothorax and pneumothorax) in ICD implantation with and without cardiac resynchronisation therapy (CRT) in a series of consecutive patients in a third level hospital.
Methods: We performed an observational study of all consecutive patients that underwent ICD implantation -with and without CRT- through axillary vein puncture in a third level hospital between July 2006 and December 2014. Clinical and radiologic immediate and follow-up complications were reviewed.
Results: During this period 483 leads were implanted through axillary vein puncture in 276 procedures (first implantation 87%, re-implantation 7.2%, upgrade 5.8%) in 264 patients (20.3% women, 60.02 ± 15.5 years-old, 1.75 leads per patient). 81 leads (29.5%) in 78 patients were implanted through the coronary sinus for resynchronization. Ischaemic heart disease (43.1%) and dilated non-ischaemic heart disease

(26.2%) were the most common reasons for implantation. Complication rate related to venous access was 1.4% (4 lead fractures) after follow-up of 27.7 ± 21.1 months [1-130]. There were no pneumothorax or haemothorax reported.
Conclusions: Axillary venous access is a safe approach for ICD lead implantation with and without CRT. In our series the complication rate directly related with the venous puncture is lower than those described with other venous accesses, especially acute complications as pneumothorax and haemothorax which are absent from our data. Longer follow-up studies are needed to confirm the low lead fracture rate.

P436

The possibilities of myocardium scintigraphy with 99mTc-MIBI and 123I-MIBG for optimization of the ICD defibrillate electrode location in patients with coronary artery disease: the comparative study

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Introduction: It's well known, that it's necessary to choose the correct place for the defibrillating electrode (DE) during the ICD implantation procedure. DE implantation using basic criteria aren't taken into account the myocardial perfusion and sympathetic activity disorders. That may lead to the rise of the pacing threshold (PT), drop of the ventricular signal amplitude (VSA) and finally to inappropriate shocks. So it's necessary to find new criteria that can determine the most suitable place for DE implantation.
Purpose: The aim of this study is to research the possibility of myocardial perfusion scintigraphy (MPS) with 99mTc-methoxy-isobutyl-isonitrile (99mTc-MIBI) and 123I-methaiodobenzylguanidine (123I-MIBG) to optimize the choice of the correct place for DE implantation.
Methods: 80 patients (male-68, age-65,0±7,3 years) with coronary artery disease and indications for the ICD implantation were examined. All patients were divided into 3 groups. The 1-st group consisted of 26 patients with MPS before the ICD implantation, which was performed with 740 MBq of 99mTc-MIBI. The 2-nd group consisted of 27 patients with MPS before the ICD implantation, which was performed with 111-370 MBq of radiopharmaceutical 123I-MIBG. In both groups DE was implanted to the septal position, if the perfusion disorders were in the apical segments, to the apical position, if perfusion disorders were in the septal segment. The 3-rd group consisted of 27 patients who had ICD implantation using generally accepted criteria. The DE parameters were evaluated on the first and thirty-first days.
Results: In 14 (54%) patients from the 1-st group DE was implanted to the apical position, and in 12 (46%)-to the septal. On the first day after implantation in 1-st group PT was 0,46±0,07 V, VSA-10,6±3,5 mV, the electrode impedance (EI)-458,1±17,5 ohm, the shock impedance (SI)-63,7±8,2 ohm. In 3-rd group, 0,85±0,17 V, 8,0±1,1 mV, 473,2±25,0 ohm and 56,9±9,7 ohm, respectively ($p<0,001$). On the thirty-first day in 1-st group PT was 0,4±0,15 V, VSA-13,4±2,07 mV, EI-532,2±36,2 ohm, SI-52,8±3,8 ohm. In 3-rd group 1,2±0,14 V, 5,7±0,87 mV, 615,2±26,1 ohm and 60,0±5,07 ohm, respectively ($p<0,001$). In 15 (55%) patients from the 2-nd group DE was implanted to the apical position, and in 12 (45%)-to the septal. There weren't significant differences between groups 2 and 3 on the 1-st and 31-st days. 2 patients from 2-nd group had inappropriate shocks due to low VSA.
Conclusion: The results of the study show that DE implantation in the area of the lowest ischemic injury estimated by MPS with 99mTc-MIBI will reduce PT rise, the drop of VSA and will minimize the quantity of inappropriate shocks in patients with coronary artery disease and ICD. At the same time, the MPS with 123I-MIBG don't allow a significant improvement in electrophysiological parameters in these patients.

P437

Role of myocardium perfusion scintigraphy in defibrillating electrode implantation place in patients with coronary artery disease

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Introduction. It's well known, that it's necessary to choose the correct place for the defibrillating electrode (DE) during the ICD implantation procedure. DE implantation using basic criteria aren't taken into account the myocardial perfusion disorders. That may lead to the rise of the pacing threshold (PT), drop of the ventricular signal amplitude (VSA) and finally to inappropriate shocks. So it's necessary to find new criteria that can determine the most suitable place for DE implantation.
Purpose: The aim of this study is to estimate the results of the myocardial perfusion scintigraphy in choosing of the optimal place for DE implantation.
Methods: 53 patients (male-45, age-65,0±7,3 years) with coronary artery disease and indications for the ICD implantation were examined. All patients were divided into 2 groups. The 1-st group consisted of 26 patients with myocardial perfusion scintigraphy before the ICD implantation, which was performed with 740 MBq of radiopharmaceutical 99mTc-methoxy-isobutyl-isonitrile. In this group DE was implanted to the septal position, if the perfusion disorders were in the apical segments, to the apical position, if perfusion disorders were in the septal segment. The 2-nd group consisted of 27 patients who had ICD implantation using generally accepted criteria. The DE parameters were evaluated on the first and thirty-first day.
Results: In 14 (54%) patients from the first group DE was implanted to the apical position, and in 12 (46%)-to the septal. On the first day after implantation in 1-st group PT was 0,46±0,07 V, VSA-10,6±3,5 mV, the electrode impedance (EI)-458,1±17,5 ohm, the shock impedance (SI)-63,7±8,2 ohm. In 2-nd group, 0,85±0,17, 8,0±1,1, 473,2±25,0 and 56,9±9,7, respectively ($p<0,001$). On the thirty-first day in 1-st group PT was 0,4±0,15 V, VSA-13,4±2,07 mV, EI-532,2±36,2 ohm, SI-52,8±3,8 ohm. In 2-nd group 1,2±0,14, 5,7±0,87, 615,2±26,1 and 60,0±5,07, respectively ($p<0,001$). 2 patients from 2-nd group had inappropriate shocks due to low VSA.
Conclusion: The results of the study show that DE implantation in the area of the lowest ischemic injury estimated by myocardial perfusion scintigraphy will reduce PT rise, the drop of VSA and will minimize the quantity of inappropriate shocks in patients with coronary artery disease and ICD.

P438

Comparison of the number of inappropriate ICD shocks in patients with lead dysfunction

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Background: Implantable cardioverter defibrillators (ICD) are widely used in clinical practice and have demonstrated to be beneficial for primary and secondary prevention of sudden cardiac death. However, lead-related complications such as lead fracture or insulation defects leading to inappropriate shocks are a major problem for ICD patients since they are common and associated with increased morbidity and mortality.
Purpose: The goal of our study was to investigate the presentation of ICD lead defects regarding inappropriate ICD shocks between different brands.
Methods: We retrospectively analyzed all defects of chronic implanted leads in our hospital occurring from 2013 to 2016. Acute lead complications were excluded from our analysis.
Results: In total, 55 lead defects occurred from 2013 to 2016 in our hospital including 22 leads from Medtronic, 22 from Biotronik, 9 from St. Jude Medical, 2 from Boston Scientific. 9/22 defect Medtronic Sprint Fidelis leads, 20/22 defect Biotronik leads were Linox S leads and 8/8 defect St. Jude Medical leads were Durata leads.
The average lead survival was 2.7 years for Medtronic leads, 3.8±2.4 years for Biotronik leads, 3.5 years for St. Jude Medical leads, 10.1±6.3 years for Boston Scientific leads.
In 13 patients, inappropriate shocks occurred (2/22, 8/22, 3/8, 0/2, for Medtronic, Biotronik, St. Jude Medical, Boston Scientific, respectively). The average number of inappropriate shocks was 1 for Medtronic, 16.5 for Biotronik and 6.3 for St. Jude Medical leads (Figure 1B).
Patient alert occurred in 9/22 Medtronic lead defects and in 1/8 St. Jude Medical lead defects. Alerts during home monitoring occurred in 1/22 Medtronic lead defects and in 6/22 Biotronik lead defects. Inappropriate shocks occurred in 1/8 Biotronik lead defects despite an alert during home monitoring. No inappropriate shock occurred when patients were notified through a patient alert.
Conclusion: In our cohort, the number of inappropriate ICD shocks in patients with ICD lead defect vary significantly between different brands. Device implemented algorithms or home monitoring can significantly reduce the number of inappropriate shocks and therefore reduce patient harm caused by lead failure.

Abstract P438 Figure.

P439

Incidence and causes of stroke in ICD-patients

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Aim of the study was to evaluate the incidence and causes of stroke in ICD patients.
Methods: A total of 2017 consecutive patients of the prospective single-centre ICD-registry Ludwigshafen who underwent an ICD-implantation between 1992 and 2012 for primary or secondary prevention of sudden cardiac death were analyzed. Median follow-up time was 5 years.
Results: During a median follow-up time of 5 years a total of 123 (6%) ischemic and 4 (0.2%) haemorrhagic strokes occurred in 125 patients. The estimated 5-year and 10-year stroke incidence was 5% respectively 10%. In a multivariate analysis adjusted